

Claims

1. An arrangement of luminescent materials for excitation by means of a radiation source and involving the use of a luminescent material having a Ce-activated garnet structure $A_3B_5O_{12}$, in which the first component A contains at least one element from the group consisting of Y, Lu, Se, La, Gd and Sm and the second component B represents at least one of the elements Al, Ga and In, characterized in that

plural such luminescent materials are mixed and the mixture of luminescent materials contains a garnet in which the first component A consists at least in part of Tb.

2. The arrangement of luminescent materials as recited in claim 1, characterized in that

said arrangement of luminescent materials is excitable by radiation in the range of 400 to 500 nm, particularly 420 to 490 nm.

3. The arrangement of luminescent materials as recited in claim 1 or 2, characterized in that

said mixture of luminescent materials contains a garnet of the structure $Y_3(Al,Ga)_5O_{12}:Ce$ and a garnet of the structure

$(Tb_{1-x-y}SE_xCe_y)_3(Al,Ga)_5O_{12}$, where

SE = Y, Gd, La, Sm and/or Lu;

$0 \leq x \leq 0.5 - y$;

$0 < y < 0.1$.

4. A wavelength-converting casting compound comprising an arrangement of luminescent materials for excitation by means of a radiation source and involving the use of a luminescent material with a Ce-activated garnet structure $A_3B_5O_{12}$, in which the first component A contains at least one element from the group consisting of Y, Lu, Se, La, Gd and Sm and the second component B represents at least one of the elements Al, Ga and In, based on a transparent plastic, especially a casting resin, characterized in that

plural such luminescent materials are mixed, the mixture of said luminescent materials contains a

garnet in which the first component A consists at least in part of Tb, and said arrangement of luminescent materials is dispersed, as a mixture of inorganic luminescent pigment powders, in transparent plastic.

5. The casting compound as recited in claim 4,
characterized in that

said luminescent pigments have particle sizes $\leq 20 \mu\text{m}$ and a mean particle diameter $d_{50} \leq 5 \mu\text{m}$.

6. The casting compound as recited in claim 4 ~~or 5~~,
characterized in that

in addition to said casting resin and said luminescent pigments, thixotropic agents, a mineral diffusor, a water repellent and/or a bonding agent are present therein.

7. The casting compound as recited in ~~any of claims 4 to 6~~,
characterized in that

said arrangement of luminescent materials is excitable by radiation in the range of 400 to 500 nm, particularly 420 to 490 nm.

8. The casting compound as recited in ~~any of claims 4 to 7~~,
characterized in that

said mixture of luminescent materials contains a garnet of the structure $\text{Y}_3(\text{Al,Ga})_5\text{O}_{12}:\text{Ce}$ and a garnet of the structure

$(\text{Tb}_{1-x-y}\text{SE}_x\text{Ce}_y)_3(\text{Al,Ga})_5\text{O}_{12}$, where

SE = Y, Gd, La and/or Lu;

$0 \leq x \leq 0.5 - y$;

$0 < y < 0.1$.

9. An arrangement of luminescent materials with a radiation source that emits radiation in the blue or UV region of the optical region of the spectrum, said radiation being converted partially or completely into longer-wave radiation by means of an arrangement of luminescent materials, and in

the case of partial conversion, converted radiation being mixed with emitted radiation from said radiation source to produce white light in particular, characterized in that the conversion is effected by means of a mixture of luminescent materials as recited in any of claims 1 to 3.

10. The arrangement of luminescent materials as recited in claim 9, characterized in that the emitted radiation from said radiation source is in the wavelength range 400 to 500 nm, particularly 430 to 480 nm.

11. The light-source arrangement as recited in claim 10, characterized in that said radiation source is a blue-emitting light-emitting diode, especially based on GaN or InGaN.

12. The light-source arrangement as recited in claim 11, characterized in that said light-emitting diode is provided with a casting compound as recited in any of claims 4 to 9.

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